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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/044,974      | 01/15/2002  | Eric C. Fox          | 5791                | 2770             |

7590                    10/23/2002

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EXAMINER

TRAN, TAN N

ART UNIT

PAPER NUMBER

2826

DATE MAILED: 10/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |                                  |  |
|------------------------------|--------------------------------------|----------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b>               | <b>Applicant(s)</b>              |  |
|                              | 10/044,974<br>Examiner<br>TAN N TRAN | FOX, ERIC C.<br>Art Unit<br>2826 |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 15 January 2002.  
 2a) This action is FINAL.                  2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-18,21 and 22 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) 14-18,21 and 22 is/are allowed.  
 6) Claim(s) 1,7-9 is/are rejected.  
 7) Claim(s) 2-6 and 10-13 is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.  
 If approved, corrected drawings are required in reply to this Office action.  
 12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
 \* See the attached detailed Office action for a list of the certified copies not received.  
 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
 a) The translation of the foreign language provisional application has been received.  
 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

|  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>3</u> . | 6) <input type="checkbox"/> Other: _____ .                                   |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election of Group I, claims 1-18,21,22 in Paper No. 6 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### **Oath/Declaration**

2. The oath/declaration filed on 01/15/02 is acceptable.

### **Claim Rejections - 35 USC § 102**

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1,7-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Watanabe (6,448,104).

With regard to claim 1 Watanabe discloses a sensor formed in a substrate 100 of a first conductivity type in a first concentration p- comprising: CMOS circuitry 3 to control the sensor; a first well 110 of the first conductivity type p in a second concentration formed in the substrate

100, the second concentration being greater than the first concentration; and a photodiode region 130 of a second conductivity type n+ formed in the first well 110. (Note lines 41-43, column 2, figs. 3A, 5, 9,10B,10C of Watanabe).

With regard to claim 7, it is inherent that a gate electrode insulatively spaced over the first well 110 and disposed to control a transfer of charge between the photodiode region 130 and predetermined region 131 of the second conductivity type because the gate electrode controls the charges that move from the source region to the drain region. Note figs. 10A-10C of Watanabe.

With regard to claim 8, Watanabe discloses the predetermined region 131 of the second conductivity type is formed in the first well 110. (Note fig. 10C of Watanabe).

With regard to claim 9, Since Watanabe discloses the substrate 100 having a first concentration and the well 110 having second concentration that is greater than the first concentration, it is inherent that the substrate 100 having a first intrinsic potential; the first well 110 having a second intrinsic potential; and the first and second intrinsic potentials induce a field between the substrate 100 and the first well 110 that repels photo generated charge from drifting from the substrate 100 into the first well.

#### **Allowable Subject Matter**

4. Claims 2-6, 10-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 2-6, 10-13 are allowable over the prior art of record, because none of these references disclose or can be combined to yield the claimed invention such as a pinning layer of

the first conductivity type formed to a shallow depth in the photodiode region and electrically coupled to the substrate as recited in claim 2, and the CMOS circuitry includes at least one FET formed in a CMOS process type well of the first conductivity type as recited in claims 10, 12,13.

5. Claims 14-18, 21,22 are allowable over the prior art of record because none of these references disclose or can be combined to yield the claimed invention such as a photodiode region of the second conductivity type formed in the second well as recited in claim 14, and an epi layer of the first conductivity type in a second concentration formed on the substrate, the second concentration being less than the first concentration, a first well of the first conductivity type in a third concentration formed in the epi layer, the third concentration being greater than the second concentration as recited in claim 21, and an epi layer of the first conductivity type in a second concentration, the second concentration being less than the first concentration; a first well of a second conductivity type formed in the epi layer as recited in claim 22.

### **Conclusion**

6. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Tan Tran whose telephone number is (703) 305-3362. The examiner can normally be reached on M-F 8:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (703) 308-6601. The fax phone numbers for the

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organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for after final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

TT

Oct 2002



NATHAN J. FLYNN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800